

CALIFORNIA STATE DEPARTMENT OF PUBLIC HEALTH

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Weekly Bulletin



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EDITOR

Relapsing Fever in California

(Continued from last issue)

In order to determine if possible the animal reservoir and insect vector in California, a number of field investigations were made, especially in 1931 and 1932. Field work was limited necessarily to the few summer months when the disease prevails. Surveys were made in only three of the foci, namely—Big Bear Lake, Lake Tahoe and Packer Lake. The survey work consisted of a thorough searching of the cabins occupied by the patients, and of the immediate vicinity; the shooting of rodents found in the vicinity; the study of the ectoparasites found on them and about their nests, and study of their blood and organs (by direct smear and animal inoculation) for the presence of spirochaetes. Table V gives a summary of the rodent survey.

TABLE V

Relapsing Fever in California—Rodent Survey

Animals	Big Bear Lake		Lake Tahoe		Packer Lake		Total
	1931	1932	1931	1932	1931	1932	
Chipmunks	44	134	66	151	17	21	433
Golden Mantled							
Ground Squirrels	29	17	51	109	1	10	217
Ground Squirrels	27	13	47	64	5	3	159
Tamarack squirrels			9	8	10	6	33
Other animals	3	32	15	3	2	8	63
Totals	103	196	188	335	35	48	905

Included under "other animals" were tree squirrels, Oregon fuzz-tailed squirrels, rabbits, rats, mice, fitch, foxes, woodchucks, weasels, bats and birds. A total of nine hundred and five animals were examined for the presence of *T. recurrentis* in

the two surveys of 1931 and 1932. During the 1932 survey thirteen strains of spirochaetes were isolated from these rodents (two strains from Tamarack, Sierra chickaree squirrels and eleven from chipmunks). The same species of rodents were found to harbor spirochaetes in the three foci investigated.

A comparative study was made of the rodent and human strains to determine if they were identical. Morphologically the organisms appeared to be the same. Experimental evidence seems to support this conclusion that spirochaetes found in Tamarack squirrels and chipmunks are identical with those found in patients associated with them, and that these rodents act as a reservoir of infection for the disease in California. A field accident supporting this conclusion occurred to a member of the survey crew. Mr. X accidentally contaminated an open wound in his hand with blood from a squirrel recently shot, which later proved to be positive for spirochaetes. Seven days later he developed a clinical case of relapsing fever and similar spirochaetes were demonstrated in his blood.

Surveys were continued in the field for several years and in 1934 a decision was made to confine these investigations to the cabins and adjacent surroundings of the patients. In one area several children had developed the disease. In one of the cabins a chipmunk's nest was found between the living room fireplace chimney and the outer wall.

A few adult nymphal ticks of the *Ornithodoros* variety were found in this nesting material. A nearby stump on which the children played yielded a number of adult and nymphal ticks of the same species. In another cabin in which two people had contracted the disease a chipmunk's nest was found between the logs of the rudely constructed wall which contained a large number of ticks of the same species. Another cabin in which 10 cases had occurred over a period of two years was searched thoroughly and while conditions were favorable for rodent infestation, none could be located, unless considerable damage was done to the walls and floors, which was decided inadvisable. From the above observation it would appear that the rodents, particularly chipmunks, often are associated closely with human habitation and occasionally build their nests within the dwellings. Two cases are on record that had two distinct infections a year apart. One of these patients had occupied the same cabin on both occasions.

The type of dwelling seems to be a definite factor in the epidemiology of the disease. According to our data cases have not been recorded from occupants of tents, cement or stucco houses, or newly erected wooden houses. To date they have occurred only in the rustic type of mountain cabin or summer home.

In Texas, relapsing fever is transmitted by *Ornithodoros turicata* and in Panama by *O. talaje* and *O. venezuelensis*. Tick transmission has been proven in California and the tick has been identified as a new species of *Ornithodoros*, now classified as *Ornithodoros hermsi*. That another species may also transmit the infection seems indicated by the work of Beck and Wheeler who allowed nymphal forms of *Ornithodoros coriaceus* to feed on infected white mice. The ticks were kept at room temperature for 50 days, then ground up and injected into normal mice. The spirochaetes were recovered on the fourth day. No feeding experiments were attempted.

Man is normally the accidental host of these ticks as evidenced by the endemicity of the disease in certain geographical regions of California. Also, these ticks are able to survive for months and even years without a blood meal. However, if the rodent host has been lacking for some time perhaps because of abandonment of the nest, and the ticks are without a food supply, man of necessity becomes the victim. "Out of season" cases and several cases in one location may be explained on this assumption. Relatively few cases give a history of tick or insect bites—of the one hundred and seven patients 32 reported

bites of some description, caused by ticks, mosquitos, fleas and possibly bedbugs and other insects. In only a few instances could ticks be definitely incriminated. This may be because: (A) the larval and nymphal stages of these ticks may be responsible for the transmission; (B) these forms are small in size, having been compared with the seeds of a strawberry; (C) ticks of the species *Ornithodoros* do not remain attached after completing the blood meal; (D) after feeding these ticks conceal themselves and hibernate for months; therefore are difficult to find. A series of five cases reported in British Columbia gave no history of insect bite, which might indicate that their problem is similar to ours.

SANITATION ALONG THE HIGHWAYS

Sanitary inspections of eating places and service stations along the following highways were undertaken during the month, as follows:

- U. S. Highway No. 50 through Alameda County from Oakland to the San Joaquin County line.
- U. S. Highway No. 99 through Stanislaus County from the San Joaquin line to the Merced County line.
- U. S. Highway No. 99 through Merced County from the Stanislaus County line to the Madera County line.
- U. S. Highway No. 99 through Madera County from the Merced County line to the Fresno County line.
- U. S. Highway No. 99 through Fresno County from the Madera County line to Fresno.
- State Highway No. 152, Pacheco Pass road, through Madera County from Califa to the Merced County line.
- State Highway No. 152 through Merced County from the Madera County line to Los Banos.
- West Side highway through Merced County from Los Banos to the Stanislaus County line.
- West Side highway through Stanislaus County from the Merced County line to the San Joaquin County line.
- State highway north to south boundary lines San Luis Obispo County.

Summary of Inspections

Food supply places inspected.....	127
Conditions satisfactory.....	99
Minor defects.....	26
Insanitary conditions.....	2
Service stations inspected.....	114
Conditions satisfactory.....	83
Minor defects.....	25
Insanitary conditions.....	6

The pleasures of the senses pass quickly; those of the heart become sorrows; but those of the mind are with us even to the end of our journey.—Spanish Proverb.

To me it seems as if when God conceived the world, that was poetry; He formed it, and that was sculpture; He varied and colored it, and that was painting; and then, crowning all, He peopled it with living beings, and that was the grand, divine, eternal drama.—Charlotte Cushman.

BACTERIAL FOOD POISONING IN CREAM FILLED PIES AND CAKES

During the months of June, July, August and September, there occur many outbreaks of bacterial food poisoning in localities scattered over the entire United States. Several outbreaks have occurred in California and some in San Diego, during the past years.

The poisoning is caused by an excessive growth of bacteria in cream fillings and decorations, cream cakes, cold mixed custards, whipped cream products, eclairs, and other foods of this kind. In the hot months the temperature produces rapid multiplication of bacteria in foods which have become infected through production, handling or distribution.

The health department is endeavoring to stamp out this needless sickness by requiring the proper refrigeration and care of this type of bakery product from the time of production until it is ultimately consumed.

The consumer and the public can be of valuable assistance to the health department by insisting upon the proper refrigeration and care of the foods they purchase and by refusing to buy or to be served with any cream or custard filled or decorated products unless they are at the time under proper refrigeration and care.

The purchaser who buys such food to be consumed at home or elsewhere should place the goods under refrigeration at once. This kind of food should not be transported in an automobile for any considerable distance, such as to picnics, trips to the back country and the like, unless adequate refrigeration is provided. The temperature in the automobile will incubate bacteria. An otherwise harmless pie may be the cause of serious illness.

Report at once to the health department, any case of food poisoning or so-called "ptomaine" that may occur in your family or among your friends. Immediate investigation will be made to determine the causative agent and eliminate the possibility of further danger from the same source.

Several localities, including San Francisco, Madera County, and others, have decreed that this class of merchandise may not be manufactured or sold during the summer months. San Diego has not taken such drastic action. With the cooperation of the baking industry, the general public and merchants dealing in these products a satisfactory control may be established. Such cooperation must be close and wholehearted.

The San Diego Health Department has established rules and regulations for the proper manufacture and care of cream and custard food products, copies of which have been freely distributed and explained to

the trade. Any person desiring a copy of these regulations for their own guidance and information may obtain it by calling at the office of the local health department—*San Diego Health Department Bulletin*.

EPIDEMIOLOGY REPORT FOR JULY

Botulism.

Four fatal cases of botulism occurred last month in Tracy among individuals who had eaten a chowder prepared with canned clams from Japan. Only one member of the family survived, a one year old child. Laboratory diagnosis was confirmed through examination of particles of clam adhering to the sides of the can. Measures were undertaken to remove this brand of clams from the market.

Food Poisoning.

An outbreak of food poisoning in a lumber camp in the high Sierra involved 45 men. Symptoms were typical to those caused by staphylococcus and allied organisms. It is believed a bread pudding prepared the previous day and held over, without ice, until noon of the next day was the causative product. The warm weather provided ample opportunity for bacterial growth.

Human Rabies.

An individual of Imperial County while visiting relatives in Mexico was bitten by a dog several months ago. Symptoms typical of rabies developed June 28th and the patient expired two days later.

Relapsing Fever.

Cases of relapsing fever occurred in at least six individuals who had been at three different localities in the high Sierra. In one family of four, every member developed the disease. In every instance, patient had occupied cottages where chipmunks had been prevalent and were often found inside the cottages.

General Health Conditions.

Measles and mumps continue to occur in epidemic proportions. There has been a slight increase in the prevalence of epidemic poliomyelitis but not more than might be expected at this season of the year. The disease will undoubtedly not reach epidemic proportions.

Other ways may fail, but one can always tell a second-rate man by the quality of his emotions. The laughter and the tears of a second-rate man are divining rods that no university training, social experience, worldly culture or tailor, can hide—George Jean Nathan.

MORBIDITY

Complete Reports for Following Diseases for Week Ending
August 8, 1936

Chickenpox

31 cases: Berkeley 3, Oakland 2, Richmond 1, Humboldt County 1, Los Angeles County 2, Los Angeles 9, Pasadena 1, Pomona 1, Santa Monica 1, Yosemite National Park 2, Orange County 1, Fullerton 1, San Francisco 2, Paso Robles 1, Palo Alto 2, Loyalton 1.

Diphtheria

23 cases: Oakland 3, Richmond 1, Los Angeles County 1, Long Beach 3, Los Angeles 7, San Gabriel 1, Madera County 1, San Diego County 2, San Diego 1, San Francisco 1, Turlock 2.

German Measles

16 cases: Berkeley 1, Oakland 3, Kern County 1, Glendora 1, Huntington Park 1, Pasadena 2, Pomona 1, Santa Ana 2, San Francisco 3, Palo Alto 1.

Influenza

8 cases: Los Angeles County 1, Los Angeles 7.

Malaria

4 cases: Merced County 3, California 1.*

Measles

89 cases: Berkeley 3, Oakland 1, Contra Costa County 3, Concord 1, Richmond 2, Fresno County 1, Selma 1, Humboldt County 2, Kern County 3, Los Angeles County 3, Long Beach 2, Los Angeles 13, Pasadena 2, Pomona 1, Redondo 1, San Marino 1, Santa Ana 1, Seal Beach 2, Tustin 1, Lincoln 1, Riverside County 2, Corona 1, Redlands 3, San Diego County 2, National City 2, San Diego 6, San Francisco 10, San Luis Obispo 2, San Mateo County 1, Burlingame 2, San Mateo 1, Santa Barbara County 1, Lompoc 7, Santa Clara County 1, Santa Clara 1, Oxnard 1, Ventura 1.

Mumps

142 cases: Berkeley 9, Oakland 1, Amador County 1, Butte County 1, Contra Costa County 1, Richmond 2, Fresno County 2, Humboldt County 1, Kern County 5, Los Angeles County 11, Arcadia 1, El Monte 1, Long Beach 5, Los Angeles 21, Pasadena 5, San Gabriel 1, Whittier 2, Lynwood 1, Monterey Park 1, Orange County 4, Anaheim 2, Fullerton 2, Santa Ana 8, La Habra 1, Laguna Beach 1, Tustin 1, Riverside County 3, Corona 2, Sacramento 4, San Bernardino 1, San Diego County 3, National City 1, San Diego 18, San Francisco 1, Santa Barbara 6, Palo Alto 2, San Jose 1, Oxnard 1, Ventura 4, Yolo County 4.

Pneumonia (Lobar)

48 cases: Berkeley 2, Richmond 1, Humboldt County 1, Los Angeles County 4, Los Angeles 19, Pasadena 1, Pacific Grove 1, Riverside County 1, San Diego 1, San Francisco 7, San Joaquin County 6, Stockton 3, San Jose 1.

Scarlet Fever

73 cases: Alameda County 1, Oakland 3, Contra Costa County 1, Fresno County 3, Bakersfield 1, Los Angeles County 4, Alhambra 1, Arcadia 1, Glendale 1, Huntington Park 1, Long Beach 1, Los Angeles 9, Santa Monica 2, Monterey Park 3, Riverside 1, Sacramento 8, Isleton 1, San Bernardino 2, San Diego County 2, San Diego 2, San Francisco 6, San Joaquin County 1, San Luis Obispo County 1, San Mateo County 1, Santa Barbara 1, San Jose 2, Santa Cruz 2, Loyalton 6, Turlock 1, Ventura County 2, Woodland 1, California 1.*

Smallpox

One case: Bishop.

Typhoid Fever

21 cases: Amador County 1, Colusa 1, Fresno County 1, Los Angeles 5, Laguna Beach 1, Sacramento County 2, North Sacramento 1, San Benito County 1, San Bernardino County 1, San Bernardino 1, San Francisco 1, Stanislaus County 3, Tulare County 1, Ventura County 1.

Whooping Cough

195 cases: Alameda County 2, Berkeley 4, Oakland 7, San Leandro 3, Contra Costa County 4, Richmond 5, Placerville 1, Fresno County 1, Fresno 4, Kings County 4, Lake County 1, Los Angeles County 22, Arcadia 4, Beverly Hills 1, Huntington Park 1, Los Angeles 40, Pasadena 9, San Fernando 2, Torrance

* Cases charged to "California" represent patients ill before entering the state or those who contracted their illness traveling about the state throughout the incubation period of the disease. These cases are not chargeable to any one locality.

4, Gardena 1, Madera 2, Orange County 7, Fullerton 4, Huntington Beach 2, Laguna Beach 1, Riverside County 1, Sacramento 8, Redlands 1, San Bernardino 5, National City 2, San Diego 13, San Francisco 5, San Joaquin County 4, San Luis Obispo County 1, Daly City 1, Santa Barbara 2, Santa Clara County 8, Modesto 2, Turlock 1, Ventura County 2, Oxnard 3.

Meningitis (Epidemic)

2 cases: San Francisco.

Dysentery (Amoebic)

2 cases: Los Angeles 1, California 1.*

Dysentery (Bacillary)

One case: Los Angeles.

Leprosy

One case: Los Angeles County.

Pellagra

2 cases: San Francisco.

Pollomyelitis

8 cases: Oakland 1, Glendale 2, Los Angeles 4, Orange County 1.

Tetanus

2 cases: Los Angeles 1, Santa Ana 1.

Trachoma

One case: Riverside.

Encephalitis (Epidemic)

4 cases: Hayward 1, Riverside 1, Santa Clara County 2.

Paratyphoid Fever

3 cases: Napa County 1, San Francisco 2.

Trichinosis

One case: San Francisco.

Food Poisoning

4 cases: San Francisco 2, Sutter County 2.

Undulant Fever

3 cases: Manhattan 1, Riverside County 1, Santa Rosa 1.

Septic Sore Throat (Epidemic)

4 cases: Lake County 1, Riverside 1, San Diego 1, Oakdale 1.

Relapsing Fever

One case: El Dorado County.

Rabies (Animal)

17 cases: Los Angeles County 8, Los Angeles 5, Orange County 1, Riverside 1, San Bernardino 1, Visalia 1.

I hope that here in America more and more the ideal of the well-trained and vigorous body will be maintained neck and neck with that of the well-trained and vigorous mind, as the two coequal halves of the higher education for men and women alike. The strength of the British Empire lies in the strength of character of the individual Englishman taken all alone by himself. And that strength, I am persuaded, is perennially nourished and kept up by nothing so much as by the national worship, in which all classes meet, of athletic outdoor life and sport.—William James (1890).

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